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EXAMINER

TUNG, TA HSUNG

ART UNIT

PAPER NUMBER

1743

4

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Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/818,752

Applicant(s)

LHA BZAL

Examiner

T. TUNG

Group Art Unit

1743

Paper No. 4

—The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address—

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- ☐ Responsive to communication(s) filed on \_\_\_\_\_
- ☐ This action is **FINAL**.
- ☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

## Disposition of Claims

- ☒ Claim(s) 1-9 is/are pending in the application.
- Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- ☒ Claim(s) 1-9 is/are rejected.
- ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- ☐ Claim(s) \_\_\_\_\_ are subject to restriction or election requirement

## Application Papers

- ☐ The proposed drawing correction, filed on \_\_\_\_\_ is ☐ approved ☐ disapproved.
- ☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner
- ☐ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119 (a)-(d)

- ☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119 (a)-(d).
- ☒ All ☐ Some\* ☐ None of the:
  - ☒ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_
  - ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a))

\*Certified copies not received: \_\_\_\_\_

## Attachment(s)

- ☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). \_\_\_\_\_
- ☐ Interview Summary, PTO-413
- ☒ Notice of Reference(s) Cited, PTO-892
- ☐ Notice of Informal Patent Application, PTO-152
- ☐ Notice of Draftsperson's Patent Drawing Review, PTO-948
- ☐ Other \_\_\_\_\_

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Claims 1-9 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The disclosure is confusing in that the covering (6, 8, 9) can be of porous material. If so, would the porous covering serve as a junction device and therefore short circuit the junction element 7?

Also, the wording at the last line of claim 1 recites a junction that is "inserted with a thin film". It is not clear what structure is called for and where is the supporting discussion in the specification.

Claims 1-9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Throughout the claims, the elements of the claims needs to be preceded by an article. For instance, at claim 1, line 1, --a-- should be added before "plate".

Claim 1, line 6, "such as..." is indefinite.

Claim 1, line 10, it is not evident if the phrase "printed on the substrate...." applies only to the capillary or applies as well to the other junctions recited.

Claim 1, lines 6-10, there is redundancy in the junctions that are recited. For instance, what is the difference between a material that can exhibit capillary action and a capillary? And, if

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the porous polymer membrane is of cellulose nitrate (claim 2), it would be redundant with the "cellulose nitrate" of claim 1, line 7.

Claim 1, last line 1, "inserted with a film" is not understood. By this expression, does applicant mean the junction is located on or within an opening in the support housing?

Claim 5, line 3, "the electrolyte" does not have antecedent basis.

Claim 6, lines 3-5, "the Ag electrode", "the Ag/AgCl electrode" and "the mercury/mercury oxide electrode" do not have antecedent basis.

Claim 8, lines 5 and 8, why is conductor line plural? There should be only one line for each electrode.

Claim 8 lines 9-10, "electrode site" and "connection sites" do not have antecedent basis. Also, why is connection site plural?

Claim 8, lines 14-15, "a line of capillary" is vague.

Claim 8, last line "can cover" is indefinite.

Claim 9, line 5, why is electrode plural?

Claim 9, line 8, "the conductors" does not have antecedent basis.

Claim 9, lines 9-10, "the electrode site" and "connection site" do not have antecedent basis.

Claim 9, line 13, if the hydrogel is the inner reference solution of parent claim 1, they need to be corresponded.

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The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kotani 4,857,166 in view of Kater et al 3,498,899 and/or Hoole et al.

Kotani discloses a conventional planar reference electrode comprising a plastic substrate A, a Ag electrode layer D with a lead portion C on the substrate, a AgCl layer B over the Ag electrode layer, a gel inner reference electrolyte layer G over the AgCl layer, a plastic support defining a housing around the electrode and the electrolyte, and a junction device J connecting the reference electrode to an external sample. The various layers are formed by screen printing. See col. 4, line 42 to col. 8, line 20. Because of the numerous informalities in claim language it is not totally clear just how applicant's claims differ. For the purpose of this Office action, the last line of claim 1, the phrase "inserted with a thin film" has been construed to call for the junction device to on or within an opening in the support housing around the electrode. Applicant's claims then differ by calling for the junction device to be of a porous substance selected from the group of materials listed at lines 6-10 of claim 1.

Kater discloses a variety of junction devices including porous ceramic, bundled fibers, nitrocellulose membrane, cellulose acetate, etc. See col. 1, lines 49-52; col. 3, lines 7-10. Hoole

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discloses a junction device in the form of bundled fibers. See col. 3, lines 31-35. It would have been obvious for Kotani to adopt any of the junction devices set forth by the secondary references, since the incorporation of known features from analogous prior art is within the skill of the art in the absence of unexpected result.

In regard to claim 7, note that Kotani discloses that support F can be of the same material as the substrate (col. 5, line 16). The substrate can be of polyethylene terephthalate (col. 7, line 18), which is a polyester.

Claims 7, 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kotani in view of Kater et al and/or Hoole and Neti et al 4,002,547.

These claims differ by calling for the supporting housing to act as a junction device.

Neti discloses a reference electrode wherein a housing 12 itself serves also as a junction device. See col. 4, lines 7-12. It would have been obvious for Kotani to make the support housing itself as the junction device in view of Neti. Several advantages are readily evident from this modification. One, a large junction area is provided so as to minimize the clogging problem of conventional junction devices, as discussed at col. 4, lines 29-32. Two, a single material construction (one without a junction device of a second material) would facilitate manufacturing and sealing. Three, there would be no problem with thermal stress caused by difference in coefficients of expansion.

Claims 1-4, 6, 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cranny et al in view of Kater et al and/or Hoole et al.

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Cranny discloses a planar reference electrode with an alumina substrate, a Ag electrode (with a terminal lead portion) on the substrate, a AgCl layer on the electrode, an internal electrolyte layer over the AgCl layer, a support housing (sealant layer) around these layers and a hydration port in the support housing presumably acting as a junction device. The various layers are applied by screen printing. See figure 1 and page 1558. Applicant's claims apparently differ by calling for the junction device to comprise one of a list of materials set forth at lines 6-10 of claim 1.

As discussed before, Kater and/or Hoole render obvious the incorporation of a junction device comprising a porous ceramic, a bundle of fibers, cellulose nitrate, cellulose acetate, etc.

Claims 5, 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cranny et al in view of Kater et al and/or Hoole and Kotani.

Claim 5 differs by calling for an internal electrolyte to contain a hydrogel or a glue. Claim 7 differs by calling for the support housing to comprise a polyester material.

As discussed before, Kotani discloses a planar reference electrode with an internal electrolyte that contains a hydrogel or a glue. See col. 5, lines 32-40. Kotani also discloses a support housing of the same material as the electrode substrate, which can be made of a polyester. See col. 5, lines 14-20. It would have been obvious for Cranny to adopt these features of Kotani, since the incorporation of known features from analogous prior art is within the skill of the art in the absence of unexpected result.

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Claims 7, 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cranny et al in view of Kater et al and/or Hoole and Neti et al.

These claims differ by calling for the support housing to also serve as the junction device. As discussed previously, that is rendered obvious by Neti.

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 1-6 are rejected under 35 U.S.C. 102(a) as being anticipated by Suzuki et al.

Suzuki discloses a reference electrode with a glass substrate, a Ag/AgCl electrode, an internal reference electrolyte comprising hydrogel, a liquid junction material made of resin and presumably porous that is printed onto the substrate and a cover passivation layer covering the above elements. See page 1181 and figure 3.

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al in view of Kotani or Neti et al.

This claim differs by calling for the passivation covering layer to comprise a polyester material or a porous membrane.

Kotani discloses a covering layer F made of a polyester material. See col. 5, lines 14-20. Neti, as discussed before, discloses a reference electrode housing being of porous material and thus also serving as the junction device. See col. 4, lines 7-12. It would have been obvious for Suzuki to use a polyester material for the passivation covering layer in view of Kotani. Or, it would have been obvious for Suzuki to adopt a porous covering layer that can also act as the junction device



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in view of Neti. The incorporation of known features from analogous prior art is within the skill of the art in the absence of unexpected result.

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki etal in view of Kotani or Cranny etal.

This claim differs by calling for the steps of forming the electrode layer and the insulation covering layer by screen printing.

Kotani at col. 5, lines 1-30 or Cranny at page 1558, right column, discloses forming a silver electrode layer and its insulation covering layer by screen printing. It would have been obvious for Suzuki to use screen printing to form the silver electrode layer and its covering insulation layer in view of the secondary references, because screen printing is the most common manner of depositing layers and there is no unexpected result.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki etal in view of Kotani or Cranny etal and Neti etal.

This claim further differs by calling for the sealing layer to be porous. As discussed before, that is rendered obvious by Neti.

Claims 1-4 are rejected under 35 U.S.C. 102(b) as being anticipated by Mroz etal.

Mroz discloses a reference electrode with a substrate (the bottom sealing film), a Ag/AgCl electrode, an internal reference electrolyte solution, a glass fiber junction device printed on the substrate and a covering layer (the top sealing film) over the other elements. See figures 1-2; pages 1373-4.

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Claims 5, 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mroz et al in view of Suzuki et al or Kotani.

These claims differ by calling for the internal electrolyte to comprise a hydrogel or glue. Suzuki (page 1181, right column, line 12) or Kotani (col. 5, lines 32-40) discloses an internal electrolyte comprising hydrogel or glue. It would have been obvious for Mroz to adopt such an internal electrolyte, since a gelled electrolyte retards evaporation and electrolyte loss.

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mroz et al in view of Kotani or Cranny et al.

This claim differs by calling for the step of forming the sealing layer by screen printing. As discussed before, that is rendered obvious by Kotani or Cranny.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mroz et al in view of Kotani or Cranny et al and Neti et al.

This claim further differs by calling for the sealing member to be porous so that it can also act as the junction device. As discussed before, that is rendered obvious by Neti.

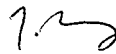
Benco et al 5,554,272 discloses an internal electrolyte comprising hydrogel. See col. 4, line 12. Slack et al 5,421,983 discloses forming the various layers of an electrode by screen printing. See col. 6, lines 23-54. Staunton 3,461,055 discloses a reference electrode with a cotton yarn packing. See col. 3, line 41. Szonntag 4,031,606 discloses a referenc electrode with a porous junction device 10. See figure 1.

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The examiner can be reached at 703-308-3329. His supervisor Jill Warden can be reached at 703-308-4037. Any general inquiry should be directed to the receptionist at 703-308-0661. A fax number for TC 1700 is 703-872-9310.



Ta Tung

Primary Examiner

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